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A CASE OF WOUND OF THE SCLERA TREATED BY SUTURE, WITH REMARKS.

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It is one of the fundamental rules of surgery, in all cases of simple incised wounds, to bring the edges of the wound in contact after all bleeding has been arrested. It would seem strange, then, that this course of treatment has not been more adopted in the treatment of wounds of the eye. There are various means for bringing about this object, such as position, support by bandage or adhesive plaster, and the suture. The latter would seem at first sight to be most appropriate in wounds of the eyeball, and yet it is only lately that it has come into frequent use. This is no doubt due, in a measure, to the fact that such wounds of the eyeball are usually small and do not gape very wide, and again to the difficulty of their application and subsequent removal. In support of this latter fact, Mr. Thomas Windsor, in an interesting paper on "The Treatment of Wounds of the Eye by Suture," (Manchester Medical and Surgical Reports, October, 1871, pp. 1–8,) mentions the difficulties encountered in the introduction of sutures in the various trials at keratoplasty, and how often the attempt failed An interesting review of these attempts at this impracticable operation may be found in his paper. It is not the purpose of this paper to say any thing about this subject, but to confine our remarks to the use of sutures in wounds of the sclera. It is well known that the possibility of introducing sutures even in the cornea has been demonstrated by Dr. Williams of Boston, who used them after cataract extraction. It is not necessary here to speak of his method, as

it is mentioned in his book, and again in the "Archives of Ophthalmology and Otology," (ii. p. 102.)

It was shortly after reading Mr. Windsor's paper, that the case I am about to report came under my care, and this method of treatment at once came into my mind. Before giving my own case, however, let me give in brief the recorded cases in which a wound of the sclera has been sutured. I should add that this task is rendered easy by making use of the references in Mr. Windsor's paper.

Von Walther just mentions the use of sutures in wounds of the eye, but, it appears, had never tried them himself.[1] The first case to which I refer was recorded by Dr. O. D. Pomeroy.[2]

"John S. N——, aged 21 years, a soda-water manufacturer, was struck on the eye by fragments of a soda-bottle which had burst, inflicting a wound of the sclerotic at the margin of the cornea, about four lines in length, causing a prolapsus of iris, (and perhaps of choroid,) an unsightly coloboma resulting. I easily succeeded in reducing the prolapsus, although it remained but momentarily. Two sutures were then passed through the conjunctiva, near the margin of the wound, and gradually tightened as the prolapsus was reduced; they failed, however, in reducing the whole, so a suture was placed between the two already in. The sclerotic aspect of the wound afforded a sufficiency of conjunctiva, but not so with the corneal; so the suture was passed through a portion of the sclerotic at its corneal junction, which closed the wound satisfactorily. The after-treatment consisted in the application of ice to the eye, atropine, and leeches.

"In fifty hours, the lateral sutures were removed, when the wound was found to be well adhered. On the next day, an effort was made to remove the central suture; but as the wound showed signs of gaping if much interfered with, it was not removed until the following day, when the wound was found to be well united. There was a little conjunctival injection,

[1] P. F. Von Walther, Augenkrankheiten, ii. p. 16. Freib. i. Br., 1849.

[2] Ophthalmic Review, vol. iii. p. 80, from the Boston Medical and Surgical Journal, vol. lxxiii. p. 216.

which disappeared in a few days. Patient sees as well, or nearly so, as with the other eye, which is normal."

Mr. Bowman twice resorted to this procedure.[1] In the first case, John M., aged 25, was admitted into the hospital October 31st, 1862, under Mr. Bowman, on account of an injury he had received the day previously. He was at work with an iron punch, when a piece flew off and struck the sclerotic on the inner side of the cornea close to its margin. There was a horizontal wound in the sclerotic at the inner margin of the cornea about $\frac{1}{6}''$ in length. The edges were not in apposition, and vitreous was oozing out. The anterior chamber was deep and the plane of the iris sloping backward. The aqueous was serous—T. 3, and daily diminishing. He could count fingers at from 6 to 7′. Mr. Bowman first made iridectomy at the inner side, and then adjusted the edges of the wound in the sclerotic by a fine suture, the needle being made to pass through each lip of the wound from within outward; using a fine silk thread with a needle attached at each end.

The second night after the operation, the man had a good deal of pain, which was relieved by leeches.

On November 4th, the iris had assumed its proper plane, the lens had come forward, and the tension of the globe was normal. The thread had come away. He could see letters of 16 Jaeger. The case did well, and when he left the hospital, (November 25th,) he could read letters of No. 10.

Mr. Lawson gives a short account of the second case, which is given exactly in his own words. "Mary S., aged 9 months, was brought to the hospital on July 7th, 1863, suffering from an injury to the left eye. A piece of china in falling off a shelf struck the eye, and inflicted a small wound in the sclerotic, close to the corneal margin. The wound (notwithstanding that a week had passed since the accident had occurred) was still a gaping one; the edges of it not being in apposition. Mr. Bowman applied a single suture, and with it brought the lips of the wound accurately together. No irritation followed; and on July 21st the child ceased its attendance at the hospital, the eye being quite well."

Mr. Lawson has also reported a case which was under his

[1] Injuries of the Eye Orbit and Eyelids. Lawson, London, 1867, p. 59.

own care.[1] The patient came under his care on March 5th, 1869. A few hours before, a fragment of stone flew up and struck him on the left eye. There was a jagged wound in the sclerotic, in the lower part of the eye, a short distance from the cornea. A small quantity of vitreous had evidently escaped. The wound gaped, and its lower edge was prominent, and stood away from the upper margin, which was somewhat depressed. A single suture was introduced about the middle of the wound, and brought the divided parts into apposition. The patient progressed most favorably, and the wound completely united; the presence of the stitch produced no irritation. On April 27th, the eye was free from redness and seemed to have completely recovered from the accident; but on testing his vision, he could only count fingers, and on examination with the ophthalmoscope, an extensive detachment of the retina was seen to correspond with the site of the puncture.

Mr. Windsor's case is recorded in the paper already referred to, (l. c. p. 5.) He was called to see a child whose left eye had been injured two or three hours previously. The injury was inflicted with a large blunt curved knife. On raising the lid, an incised wound was found, commencing in the inner and upper side of the cornea and extending through the sclera backward for fully half an inch; there was a nodule of iris in the anterior part; the rest of the wound was gaping widely, and through it vitreous was bulging, though none appeared to escape. Mr. W. at once thought of ligature, but it appeared unadvisable to him to give chloroform, as the child was certain to cry and struggle, and the least effort would force more vitreous out of the wound; he therefore decided to wait. He applied a bandage to the injured eye, and closed the other by plaster.

The patient was kept in bed for some time; hardly any inflammation occurred, and the wound gradually contracted.

Progress being slow, it was determined to remove the prolapsed iris, which was done under chloroform. This had a beneficial effect, the anterior part of the wound was soon firmly healed, the posterior part uniting also for a little distance further.

[1] Royal London Ophth. Hosp. Reports, vol. vii. part 1, p. 14.

In November, the centre was still open and allowed the vitreous to project; the bandage was tightly applied, and continued until December 27th, when, as the prolapse of vitreous increased rather than diminished, chloroform was given, the projecting nodule excised, and a suture passed through the middle of the wound. As the edges of the wound were thickened, endeavor was made to pass the thread obliquely through it.

The stitch, when drawn tightly, completely closed the wound. A bandage was applied. The next day the parts immediately around the wound were injected, and there was some pain. On the 30th, less congestion, and the suture had cut partially through.

A day or two after, the suture came away spontaneously, and on January 6th, the wound appeared quite closed. On the 20th, the cicatrix was quite level and all irritation had gone. When last seen, (February 24th,) the wound was quite healed. Pupil of good size, but displaced inward with a rather large coloboma. He reads slowly No. 5, and letters of No. 4 Jaeger. Media and fundus normal.

These are, so far as I have been able to find, the recorded cases, in which suturing of the sclera has been resorted to for wounds of the eye, and I will now add to them my own case. The fact that the subject was fresh in my mind when this case offered, had no doubt some influence in determining me to try it, and, as will be seen, the result was fully as satisfactory as in any of the cases I have enumerated.

James O'Neil, aged 32, a fireman, was admitted to Charity Hospital January 27th, 1873. Four days before, while chipping steel, a piece flew off and struck his right eye, causing a wound which bled a good deal at the time. The evening following the injury, the eye was very painful and he had flashes of light in it. Upon admission to the hospital, examination revealed a large horizontal wound of the sclera fully $\frac{1}{2}''$ in length. It was situated at the lower and outer part of the eye, and extended into the cornea. The iris was adherent to the corneal wound, but did not prolapse. The edges of the scleral wound were gaping widely, and a nodule of vitreous protruding.

The tension of the eyeball was greatly diminished —T. 3.

He could only count fingers at 3′. Examination with the ophthalmoscope showed considerable opacity of the vitreous, from hemorrhage, but not sufficient to prevent a reflex from the fundus; no details, however, could be made out. The visual field was normal.

As it seemed to me quite impossible to bring the edges of the widely separated wound together without a suture, I introduced a simple, very fine, black silk thread through the middle of the sclerotic part of the wound.

The needle was passed by means of the needle-holder in the ordinary way, from without inward, except that I passed it obliquely through both edges of the sclerotic, without penetrating its whole thickness.

When tied, the suture exactly adjusted the edges of the wound, and completely prevented the further escape of vitreous. A pressure bandage was now applied, atropine instilled, and the patient put to bed. The next day, (January 29th,) the patient had passed a good night, there had been some pain in the eye, but not enough to keep him awake. The edges of the wound were in apposition, and no vitreous escaping. Pupil ovally dilated. There was but little injection in the vicinity of the wound.

February 1*st.*—The wound having firmly and evenly united, I removed the suture, continuing the bandage. The eye was quite free from pain or irritation. The case continued to progress favorably, and on the 8th of February the patient was discharged. The tension of the globe was now normal; vision had risen to counting fingers at 10′, but the vitreous was still too opaque to allow a good view of the fundus. The field of vision was complete. The cicatrix was smooth and even, but the iris remained adherent to the corneal wound. I did not see the patient after he left the hospital. I have now enumerated (including my own) six cases in which this procedure was resorted to, and all of which terminated favorably.

Mr. Windsor's case is particularly instructive, for it shows that union may be effected by the use of a suture, even though the edges of the wound may have been separated for a long time. In view of this fact, he suggests that this method might

be employed with success in cases of fistulæ of the cornea and sclerotic.

Chloroform was not given in my case; but in performing the operation upon children, it would undoubtedly be necessary, to prevent a further escape of vitreous.

In all of the cases we have cited, the stitch produced little or no irritation, and in most of them was allowed to come away spontaneously. I should prefer to remove it, however, after a firm union of the wound had been accomplished. This is rendered much easier if a black thread has been employed. In conclusion, it seems to me that in all cases of wounds of the sclera or cornea in which the wound gapes, and when union is not readily accomplished without, a suture may with advantage be applied.